

ABSTRACT

Indium Nitride (InN) and Indium-rich Indium Gallium Nitride (InGaN) quantum dots embedded in single and multiple $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{In}_y\text{Ga}_{1-y}\text{N}$ quantum wells (QWs) are formed by using TMIIn and/or Triethylindium (TEIn), Ethyldimethylindium (EDMIIn) as antisurfactant during MOCVD growth, wherein the photoluminescence wavelength from these dots ranges from 480nm to 530nm. Controlled amounts of TMIIn and/or other Indium precursors are important in triggering the formation of dislocation-free QDs, as are the subsequent flows of ammonia and TMIIn. This method can be readily used for the growth of the active layers of blue and green light emitting diodes (LEDs).